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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,983	10/24/2003	Larry Forney	820701-1190	1742

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EXAMINER

JASTRZAB, KRISANNE MARIE

ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,983

Applicant(s)

FORNEY ET AL.

Examiner

Krisanne Jastrzab

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address.

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/17, 3/1/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 29-30 and 40-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, "the outer annular wall" in line 3, lacks proper antecedent basis.

With respect to claims 29-30 and 40-41, "the velocity boundary layer" lacks proper antecedent basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-9, 11-14 and 16-20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sczechowski et al., U.S. patent No. 5,439,652.

Sczechowski et al., teach a Taylor-Couette fluid reactor which is constructed of inner and outer annular cylinders, having an annular gap there between, and with the inner cylinder formed as a rotor. There are both a fluid inlet and outlet communicating with the annular gap for allowing flow through of a fluid to be treated therein. The reactor is further provided with an energy source such as a UV or infrared. Taylor vortices of Taylor-Couette flow are created within the fluid in the annular gap of the reactor when the rotor is rotated. See column 10, lines 35-68, column 11, lines 1-5, Fig. 8 and claims 23-31.

Claims 1-3, 5-9, 11-14 and 16-20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sczechowski et al., "A Taylor Vortex Reactor For Heterogeneous Photocatalysis".

The Sczechowski et al., article teaches a Taylor-Couette fluid reactor which is constructed of inner and outer annular cylinders, having an annular gap there between, and with the inner cylinder formed as a rotor. There are both a fluid inlet and outlet communicating with the annular gap for allowing flow through of a fluid to be treated therein. The reactor is further provided with an energy source such as a UV or infrared. Taylor vortices of Taylor-Couette flow are created within the fluid in the annular gap of the reactor when the rotor is rotated. See page 3166, the description of the apparatus, and page 3167, the description of the procedure.

Claims 1-28 and 31 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Woo et al., U.S. patent No. 6,576,201 B1.

Woo et al., teach a method and device for inactivation of pathogens in fluids utilizing sterilizing radiation. The device is a reactor constructed of two annular, concentric cylinders with the inner cylinder formed as a rotor. The outer cylinder being transparent to the radiation source employed. The cylinders cooperate to form an annular gap there between and a fluid inlet and fluid outlet are provided in communication there with. The radiation source can be any of UV, laser, gamma or electron beam radiation. Reflective material is included in the construction of the reactor to optimize radiation exposure. During use, the rotation of the rotor causes the generation of Taylor vortices within the fluid. See column 3, line 45 through column 4, line 35, column 5, lines 7-30 and 54-68 and column 6, lines 43-68.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 32-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al., as applied to claims 1-28 and 31 above, and further in view of Rolchigo et al., U.S. patent No. 5,993,674 and Wilson U.S. patent No. 4,963,750.

Rolchigo et al., teach a Taylor-Couette type rotary fluid treatment device for effective treatment of a variety of fluids including biological fluids, edible fluids and waste water. Rolchigo et al., further teach the fluids have characteristic Taylor numbers and that a certain value is required in order to achieve Taylor vortices in fluid flow and that such flow causes highly efficient non-turbulent shear at the device surfaces reducing the stagnant boundary layer.

Wilson also recognize the conventionality of UV sterilizing treatment of waste water, and fluids in general. See column 1, lines 44-55.

It would have been obvious to one of ordinary skill in the art to determine the Taylor number of the fluid being treated because Rolchigo et al., clearly teaches the correlation between such number and the rotation at which Taylor vortices are created.

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It would further have been obvious to one of ordinary skill in the art to employ the method and device of Woo et al., for the treatment of a variety of fluids requiring sterilizing treatment including edible fluids such as milk or juice, and waste water, because of the recognized efficacy of both a Taylor type reactor and irradiation sterilization of those fluids as taught in Rolchigo et al., and Wilson.

Claims 29-30 and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo et al., as previously applied.

Woo et al., clearly recognize that a finite penetration depth exists with the radiation source in the treatment of the fluid (see column 10 line 52 through column 11, line 5) and with such recognition it would have been well within the purview of one of ordinary skill in the art to determine that optimum, finite depth of penetration based on the velocity boundary layer being created.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krisanne Jastrzab whose telephone number is 571-272-1279. The examiner can normally be reached on Mon.-Wed. 6:30am-4:00pm and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Warden can be reached on 571-272-1281. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Krisanne Jastrzab
Primary Examiner
Art Unit 1744

November 15, 2004